DES Operations Report

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DES surveys

- Wide survey
  - Approximately 5000 square degrees
  - Five filters: g, r, i, z, and Y
  - Cover the survey footprint 10 times (10 "tilings") in each filter
  - In the first year, cover half the area in 4 tilings
  - Tight image quality requirements, particularly in r, i, and z
- Supernova survey
  - Four filters: g, r, i, and z
  - Ten pointings
  - Repeat each every 7 days or less
  - Image quality requirements more relaxed than wide survey

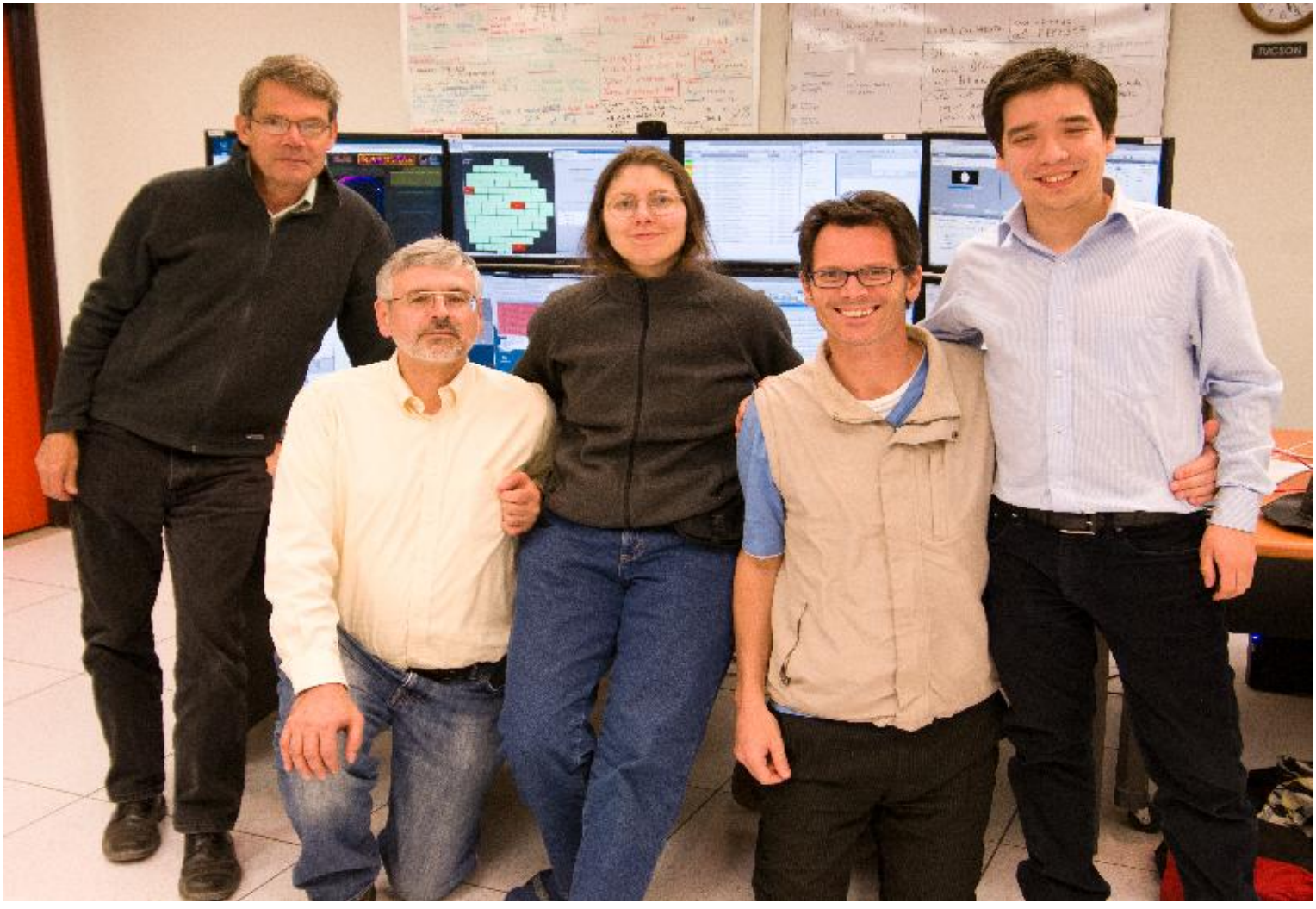
DES observing plan

- DES has 525 nights over five years: 105 nights per year.
- Survey areas are accessible September through February;
  - October through December are optimal.
- Western area of the footprint is not accessible later.
  - We need to observe in the west first.
- Moonlight scatters off of the atmosphere, particularly in bluer filters
  - for just the same reason the sky is blue.
  - Sky background is a significant source of noise.
- Weather (seeing and clouds) introduce unpredictability
  - seeing is image blur due to atmospheric turbulence
  - observing plans must adapt on short timescales

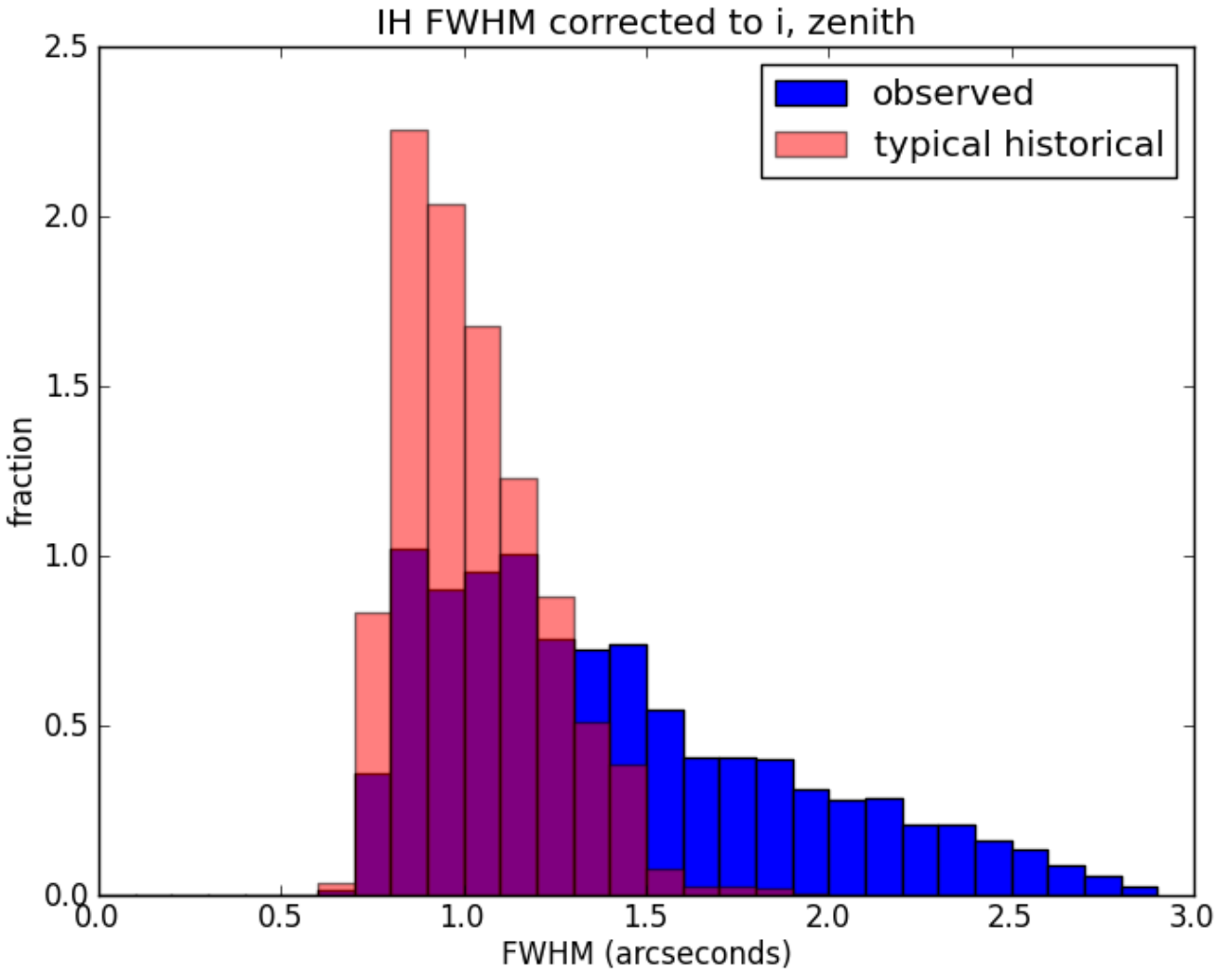
ObsTac

- ObsTac automates Observing Tactics
  - handles bookkeeping of what has been completed,
    - and what is urgently needed.
  - selects exposures based on current weather conditions.
    - calculates effective S/N based on seeing and sky brightness
    - extrapolates seeing from recent exposures using statistical models from historical data
    - calculates sky brightnes based on moon phase and position and a model for atmospheric scattering of light.
- ObsTac adds exposures to the instruments observing queue
  - interacts with other parts of the system as if it were a human
  - allows observers to keep track of what is comming up.

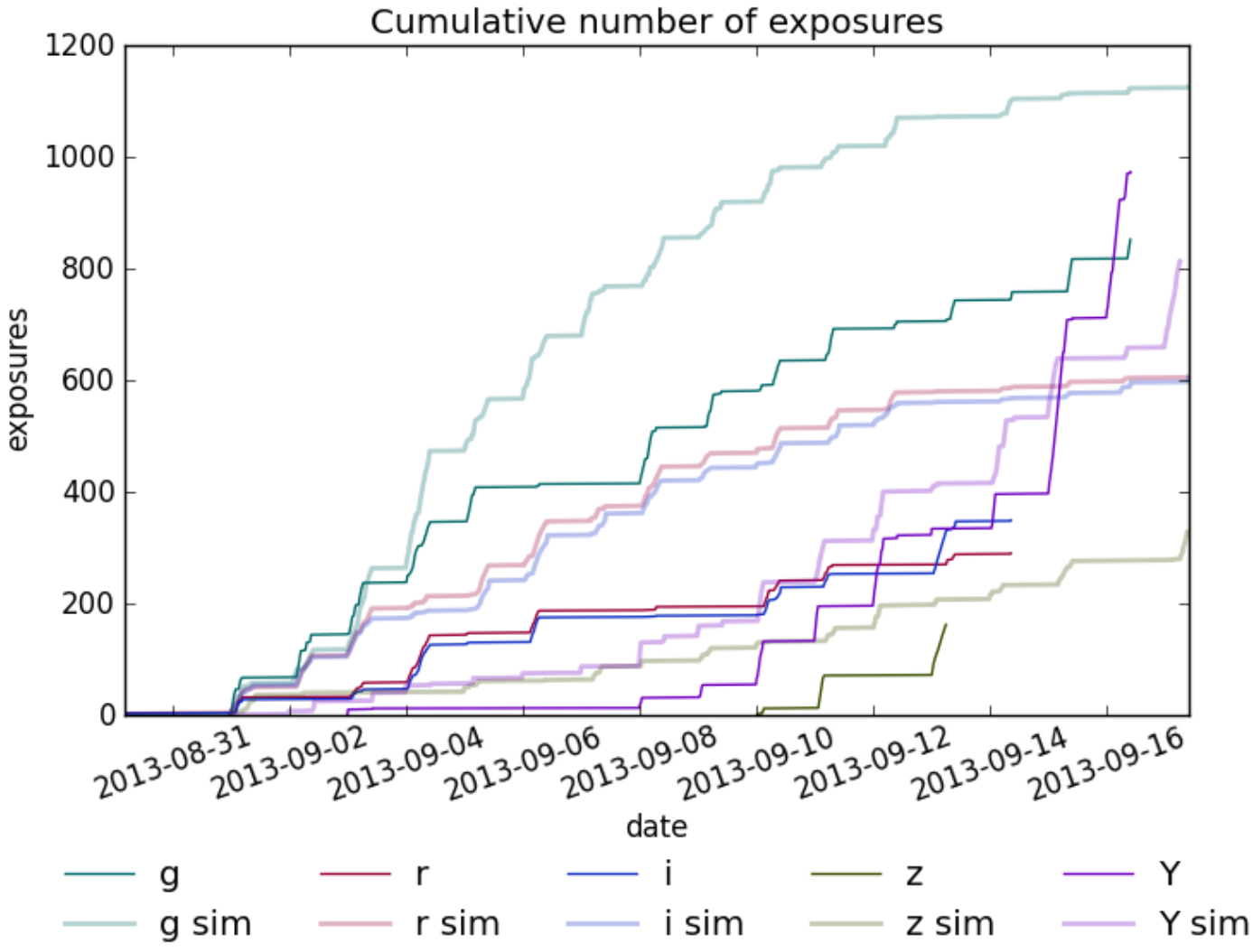
Observing started August 30



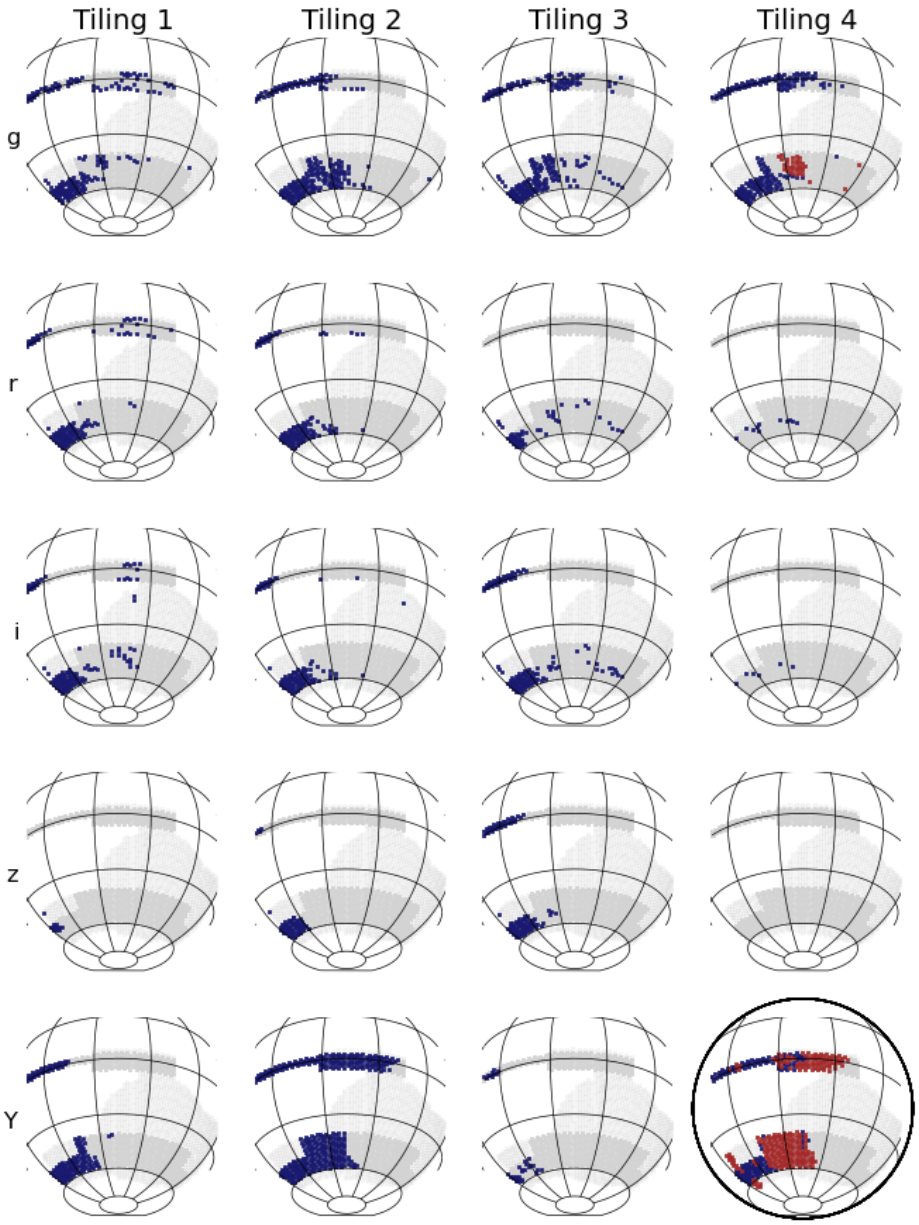
Seeing so far this year



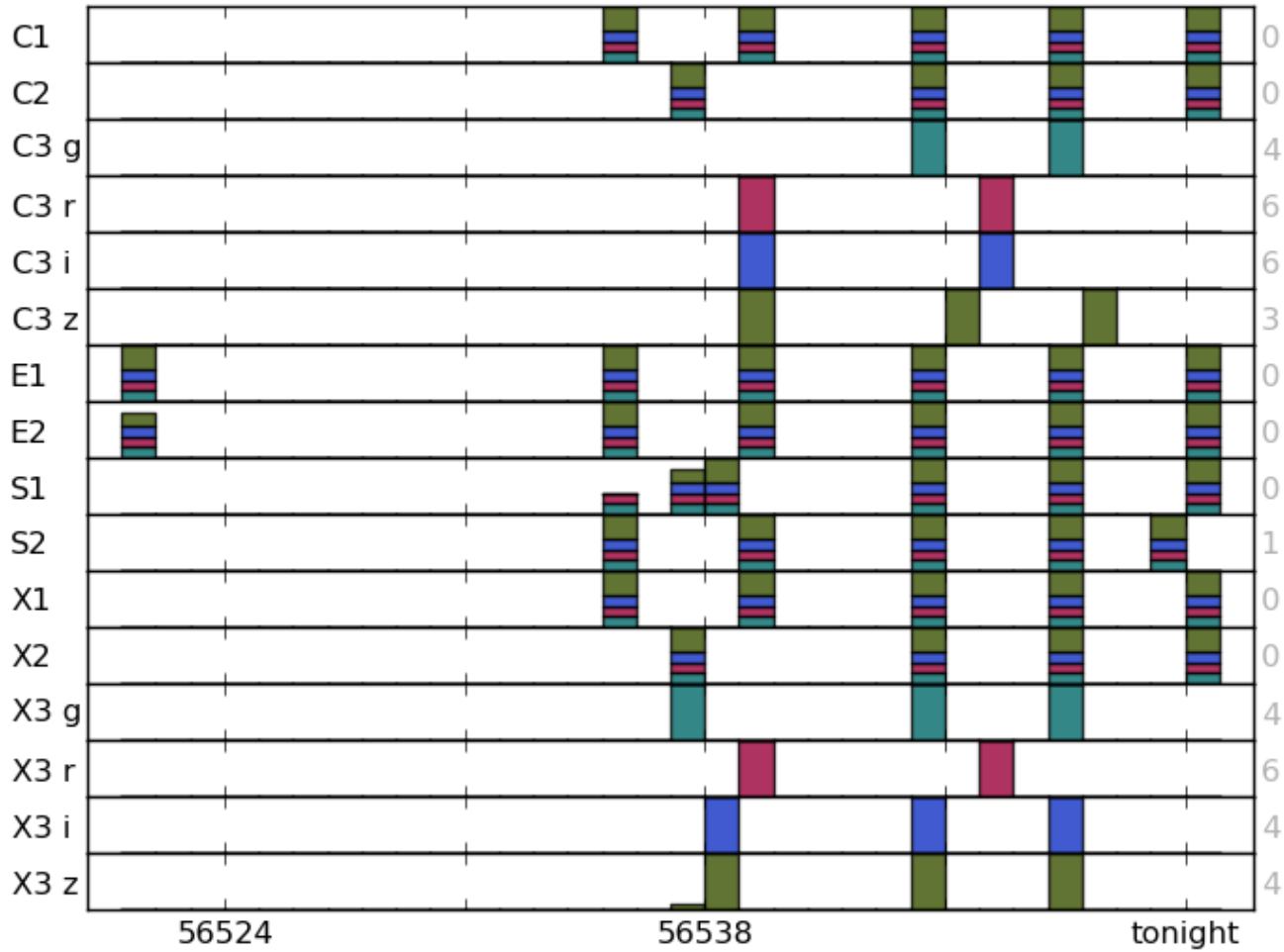
Progress relative to simulation of a typical year



Progress on survey footprint



SN cadence


C1
C2
C3 g
C3 r
C3 i
C3 z
E1
E2
S1
S2
X1
X2
X3 g
X3 r
X3 i
X3 z
0
0
4
6
6
3
0
0
0
1
0
0
4
6
4
4
56524
56538
tonight

Uptime

Activity	hours
observing	124.5
lost to telescope problems	0.5
lost to camera problems	5
closed due to weather	31.5
total	161.5

Near future

- Engineeng time October 15-22
  - F8 instruments
  - Replace nitrogen pump